

***Plectranthus acariformis* P.I.Forst. and *P. geminatus* P.I.Forst. (Lamiaceae): new species from south-east Queensland**

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Summary

Forster, P.I. (2014). *Plectranthus acariformis* P.I.Forst. and *P. geminatus* P.I.Forst. (Lamiaceae): new species from south-east Queensland. *Austrobaileya* 9(2): 279–291. *Plectranthus acariformis* and *P. geminatus* are newly described and illustrated: both are endemic to south-east Queensland. The former is currently known from a single population on trachyrhyolite in Noosa National Park near Coolumb on the Sunshine Coast whereas the latter occurs in several localities associated with basalt and rhyolite derived from the Mt Warning caldera in the Lamington Plateau and Numinbah Valley.

Key Words: Lamiaceae, *Plectranthus*, *Plectranthus acariformis*, *Plectranthus geminatus*, Australia flora, Queensland flora, Noosa National Park, Lamington Plateau, Numinbah Valley, new species, taxonomy, conservation status

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Introduction

The genus *Plectranthus* L.Herit. is diverse in Australia with over 40 recognised species (Forster 2011, 2014). In south-east Queensland (equivalent to the Southeast Queensland bioregion, cf. Sattler & Williams 1999), 11 native species are currently recognised with five of these (*P. fragrantissimus* P.I.Forst., *P. habrophyllus* P.I.Forst., *P. leiperi* P.I.Forst., *P. omissus* P.I.Forst. and *P. torrenticola* P.I.Forst.) endemic. Hypotheses on speciation in the genus in Australia have been previously outlined (Forster 2011) and it is to be expected that further taxa will be newly discovered in the region and elsewhere.

Two additional species are described in this paper. One of these (*P. acariformis* P.I.Forst.) has a highly restricted distribution and is known from a single locality which may indicate that it is an example of recent speciation. The other species (*P. geminatus* P.I.Forst.) is more widespread and known from five localities.

Materials and methods

Fieldwork was undertaken in south-east Queensland to procure fresh material for specimens and cultivation enabling observation of variation in phenology. The subsequent descriptions and observations are based on these recent collections and other historical collections in the Queensland Herbarium (BRI).

Taxonomy

***Plectranthus acariformis* P.I.Forst., sp. nov.**; With affinity to *P. parviflorus* Willd. but differing in the thickened base to the stems (versus a distinct rounded tuber), the distinctive glandular trichomes with enlarged bases that impart crenate to crenulated margins to the floral bracts and the greater number of flowers in the verticillasters (16–24 versus up to 10). **Typus:** Queensland. MORETON DISTRICT: Noosa National Park, Mt Emu (Peregrine) summit, 5 February 2014, P.I. Forster PIF40678 & G. Leiper (holo: BRI [2 sheets + spirit]; iso: K, MEL, NSW, US *distribuendi*).

Erect herb to 50 cm high; foliage scentless when crushed, not clammy; non-glandular and glandular trichomes uncoloured, non-glandular trichomes with prominent raised

bases, sessile glands 8-celled, orange. Roots thickened-tuberous to fibrous. Stems square, erect to straggling, fleshy, with stringy fibres, the lower parts up to 7 mm diameter and noticeably thickened (although not with a rounded tuber), pink-purple to pink-green, upper parts with persistent indumentum, non-glandular trichomes sparse to dense, retrorse, 6–10-celled up to 1 mm long, glandular trichomes absent or scattered to sparse, very short < 0.1 mm long, sessile glands absent. Leaves discolorous, petiolate; petioles 5–25 × 1.5–3 mm, channelled on top, non-glandular trichomes dense and shaggy, retrorse, 4–10-celled up to 1 mm long, glandular trichomes absent or scattered to sparse, very short < 0.1 mm long, sessile glands absent or occasional; laminae lanceolate-ovate to ovate, fleshy, strongly keeled, 10–45 × 5–42 mm, crenate with 6–8 teeth up to 4 mm long on each margin, of similar length along margin, secondary teeth poorly developed; tip acute; base obtuse to rounded; upper surface mid-green and with a hoary silver frosting from indumentum, veins impressed, non-glandular trichomes dense, antrorse to somewhat divaricate, 4–10-celled up to 1 mm long, glandular trichomes and sessile glands absent; lower surface pale green and with a hoary silver frosting from indumentum, veins strongly raised, non-glandular trichomes dense and shaggy (interlocking), divaricate, 6–10-celled up to 0.8 mm long, glandular trichomes generally absent or a few ‘micro’ trichomes on veins that are < 0.1 mm long, sessile glands scattered and deeply recessed. Inflorescence up to 300 mm long, usually single or with 1 or 2 side branches; axis square in cross-section, pink, non-glandular trichomes sparse to dense, divaricate, 4–10-celled up to 1 mm long, glandular trichomes absent, or sparse and minute (< 0.3 mm long), sessile glands absent; bracts obovate-rhomboid, 2.2–2.8 × 1.3–1.9 mm, ecomose, margins irregularly crenate to crenulate due to enlarged bases of glandular trichomes, non-glandular trichomes sparse, divaricate, 4–10-celled up to 0.9 mm long, glandular trichomes scattered and very short (< 0.3 mm long), sessile glands occasional to scattered; verticillasters 16–24-flowered, 5–10 mm apart; pedicels

2.5–3 × c. 0.2 mm, non-glandular trichomes sparse, antrorse to divaricate, 4–8-celled up to 0.5 mm long, glandular trichomes scattered to sparse, very short (< 0.2 mm long), sessile glands absent. Flower calyces 2.6–2.8 mm long, non-glandular trichomes sparse, antrorse to divaricate, 4–8-celled up to 0.5 mm long, glandular trichomes sparse and very short (< 0.2 mm long), sessile glands sparse. Corolla 9–11.5 mm long, lilac-purple; tube 4.5–5.5 mm long, weakly curved at 25–30° 1.5–2 mm from the base, slightly inflated upwards, non-glandular trichomes absent or scattered, 2-celled and very short (< 0.1 mm long), glandular trichomes and sessile glands absent; upper lobes suborbicular, erect to reflexed, 1.9–2.3 × 1.8–2.3 mm, non-glandular trichomes sparse, divaricate, 2–4-celled up to 0.3 mm long, glandular trichomes absent, sessile glands sparse; lateral lobes oblong, 1.3–1.5 × 0.7–0.8 mm, glabrous; lower lobe oblong-ovate, 5–5.5 × 5–5.2 mm, non-glandular trichomes sparse, divaricate, 2–4-celled up to 0.3 mm long, glandular trichomes absent, sessile glands sparse; filaments filiform, 8–9 × c. 0.2 mm, lilac, fused for 3–4 mm from the base; anthers c. 0.4 × 0.3 mm; style filiform, 8–9 × c. 0.2 mm, lilac, bifid for c. 0.4 mm. Fruit calyces 4–4.6 mm long; upper lobe broadly ovate, 2–2.2 × 2–2.2 mm; lateral lobes lanceolate, 1.5–1.8 × 0.6–0.8 mm; lower lobes lanceolate-falcate, 2–2.5 × c. 0.4 mm. Nutlets ± circular in outline, compressed flattened globose, 0.8–0.9 mm wide, 0.4–0.5 mm thick, brown, weakly verrucose. **Figs. 1–5.**

Additional specimens examined: **Queensland.** MORETON DISTRICT: Mt Peregian, Coolum (cult. The Gap, Brisbane), Jan 1957, *Blake 20077* (BRI); Noosa NP, Mt Emu (Peregian) (cult. Beenleigh), Jan 2014, *Leiper s.n.* (BRI [AQ837023], NSW).

Distribution and habitat: *Plectranthus acariformis* is currently known only from Mt Emu (Peregian), a small volcanic plug overlooking the Pacific Ocean on the Sunshine Coast in south-east Queensland. Plants of this species were common at the summit of the mountain (small hill in reality) in low heathland on fine grained trachyrhyolite (Willmott 2004) rock outcrops. These peraluminous rhyolites are also found on Mt

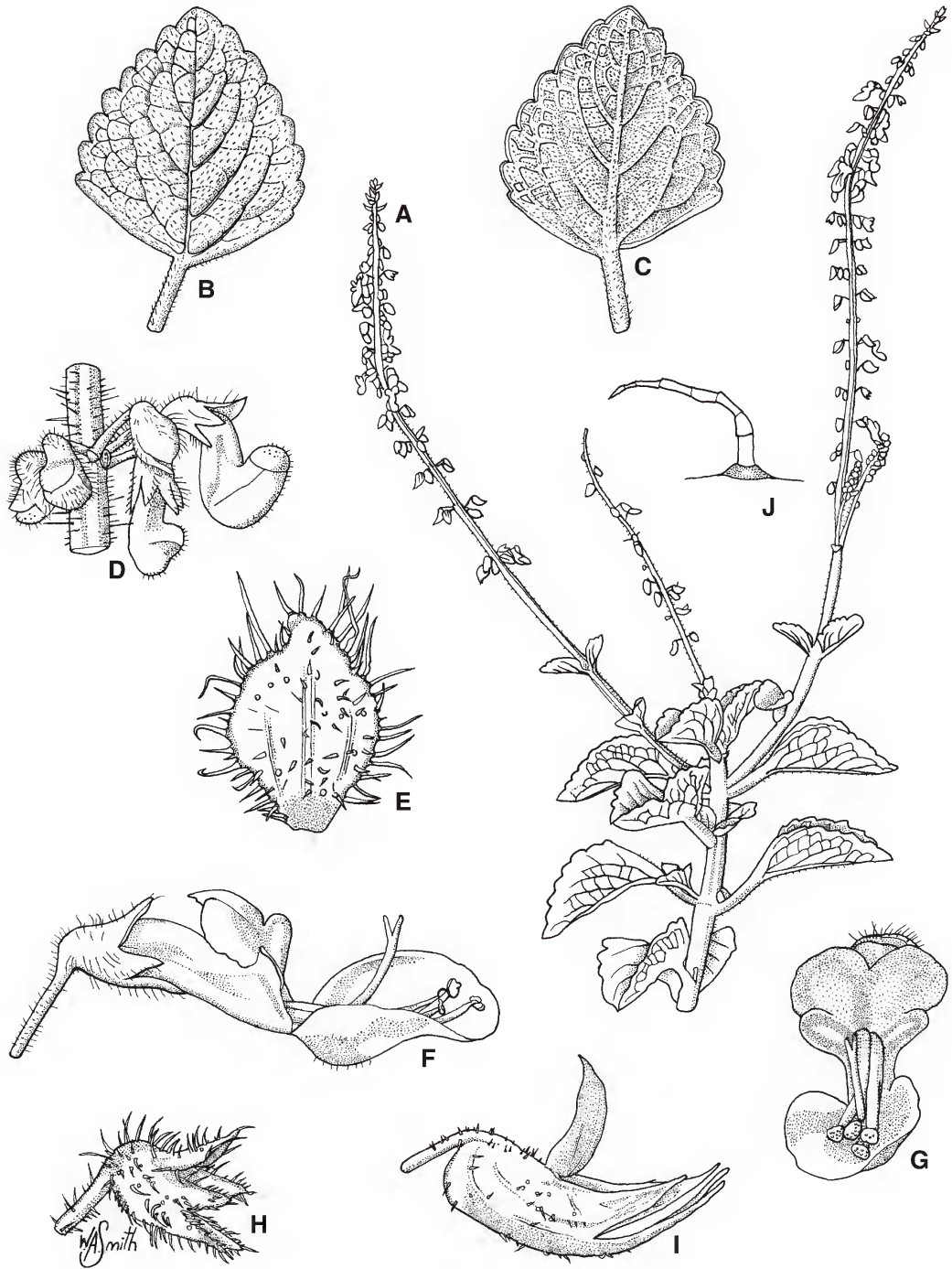


Fig. 1. *Plectranthus acariformis*. A. habit of flowering stem $\times 0.5$. B. adaxial leaf surface $\times 1$. C. abaxial leaf surface $\times 1$. D. verticillaster with buds $\times 4$. E. floral bract $\times 12$. F. lateral view of flower $\times 6$. G. front view of flower $\times 6$. H. lateral view of flower pedicel and calyx $\times 8$. I. lateral view of fruiting pedicel and calyx $\times 8$. J. non-glandular hair from foliage demonstrating enlarged basal cell $\times 36$. All from *Leiper s.n.* (BRI [AQ837023]). Del. W. Smith.



Fig. 2. *Plectranthus acariformis*. Plants in habitat at Mt Emu (Forster PIF40678 & Leiper). Photo: G. Leiper.



Fig. 3. *Plectranthus acariformis*. Detail of foliage from plants at Mt Emu (Forster PIF40678 & Leiper). Photo: G. Leiper.



Fig. 4. *Plectranthus acariformis*. Partial inflorescence with flowers from plants at Mt Emu (Forster PIF40678 & Leiper). Photo: G. Leiper.



Fig. 5. *Plectranthus acariformis*. Thickened (non-tuberous) stems bases from plants at Mt Emu (Forster PIF40678 & Leiper). Photo: G. Leiper.

Tinbeerwah in the Glasshouse Mountains and are Cenozoic in origin (Cohen *et al.* 2007).

Notes: *Plectranthus acariformis* was first collected by either Stan Blake or one of his collectors prior to January 1957 with the material cultivated by Blake in his Brisbane garden. The population of plants was rediscovered by Glenn Leiper sometime prior to January 2014 and is the only species of this genus found to date on Mt Emu. Both *P. graveolens* R.Br. and *P. parviflorus* have been collected from the nearby Mt Coolum that has similar rock outcrops; however, these are dominated by comendite (peralkaline rhyolite) (Willmott 2004; Cohen *et al.* 2007). The two hills are separated by 6 km of dissimilar habitat of lowland heathlands and swamps. *Plectranthus acariformis* is quite dissimilar to primary hybrids of these two species; however, the possibility that it is a result of hybridisation followed by polyploidy requires investigation. This mode of speciation is now known to be increasingly common in many plant groups (Soltis *et al.* 2003; Hegarty & Hiscock 2004; Mallett 2007) and would support the hypothesized patterns of diversification in the Australian taxa of this genus (Forster 2011).

Mt Emu may represent a minor centre of localised speciation given the presence of other endemics or near endemics, such as the tetraploid *Allocasuarina emuina* L.A.S.Johnson (Lamont *et al.* 2012). These authors also concluded that Mt Emu hosted refugial populations of many heathland species during Pleistocene interglaciations when the surrounding coastal plain was inundated. In glacial periods during the Pleistocene or into the recent Holocene and present, the area surrounding Mt Emu would have mainly supported low dunefields (Lees 2006) and swamps, neither comprising suitable habitats for this *Plectranthus*. Given the apparent restriction of *Plectranthus acariformis* to Mt Emu it can also be hypothesised that the species is an example of incipient speciation, but where apart from localised dispersal, range expansion has not yet occurred, unlike the case of *Allocasuarina emuina*. This also fits well with the concepts and theories of

Levin (2000) whereby every species has to begin somewhere in space and time.

Other *Plectranthus* species from Queensland that appear to be ‘stuck on a rock’ at their putative point of origin include *P. actites* P.I.Forst., *P. arenicola* P.I.Forst., *P. bipartitus* P.I.Forst., *P. cyanophyllus* P.I.Forst., *P. insularis* P.I.Forst., *P. minutus* P.I.Forst., *P. splendens* P.I.Forst. and *P. thalassoscopicus* P.I.Forst. In some cases (*P. bipartitus*, *P. splendens*) the ‘rock’ in question is an inselberg and there are definitely multiple subpopulations (‘islands on islands’ *cf.* Porembski *et al.* 2000); in others on inselbergs this is still unknown (*P. actites*, *P. cyanophyllus*, *P. minutus*). For the remaining species (*P. arenicola*, *P. insularis*, *P. thalassoscopicus*) the available habitat (rock platforms or small outcrops) is much smaller and can be measured in a handful of hectares or a few hundred square metres. Further targeted field collections may well negate these observations; however, in most instances suitable habitat is lacking or geographically well removed.

Plectranthus acariformis differs from *P. parviflorus* in a number of characters, most notably the thickened but non-tuberous base (**Fig. 5**) to the stems (versus formation of a distinct rounded tuber), the distinctive glandular trichomes with enlarged bases that impart crenate to crenulated margins to the floral bracts and the greater number of flowers in the verticillasters (16–24 versus up to 10).

Conservation status: This species occurs in a southern section of Noosa National Park; however, there are several threatening processes that are currently affecting it. Mt Emu is surrounded by housing developments and is increasingly a popular small hill for people to climb with a number of existing rough tracks from the base to the summit. Recently one of these has been ‘upgraded’ to enable vehicle access to the summit; in the process several populations of cryptic and geographically restricted ground orchids have been severely impacted with many plants destroyed. The localised population of *Plectranthus acariformis* is restricted to the very summit of the hill (**Fig. 2**) where

most of the tracks intersect and where there is repeated trampling or disturbance of the vegetation. The *Plectranthus* appears to have been trampled out or cleared from the tracks and 'sitting perches' at the summit, but persists abundantly in crevices and amongst boulders that are too rugged for most casual visitors to wander over.

Given the hypothesised incipient speciation of this species, it is likely that there is little genetic variation present in the population; indeed it is likely that most individuals (or clumps) are clonal in origin.

An appropriate conservation status (IUCN 2001) for *Plectranthus acariformis* is **Endangered** based on the criterion D.

Etymology: The specific epithet is derived from the Latin noun *acarus* which is derived from Greek *ákari* (mite) and the Latin *-formis* (like) and is a fanciful allusion to the form of the floral bracts in this species.

Plectranthus geminatus P.I.Forst., **sp. nov.** Allied to *P. caldericola* P.I.Forst. but differs in the stem bases being conspicuously thickened-tuberos, foliage that is $\pm$ scentless and with non-glandular indumentum in two distinct series (versus not), the laminae are cordate-ovate (versus broadly ovate to almost lobate) with 10–14 teeth per margin (versus 7–9), the floral bracts are broadly orbicular-reniform to orbicular-obovate (versus broadly-ovate to obovate) and the corolla tube is abruptly curved (versus weakly). **Typus:** Queensland. MORETON DISTRICT: Lamington National Park, Cainbable Falls, 27 February 2014, *P.I. Forster PIF40722 & G. Leiper* (holo: BRI [2 sheets + spirit]; iso: K, MEL, NSW *distribuendi*).

Erect to decumbent subshrub (rarely a herb) to 100 cm high; foliage $\pm$ scentless when crushed, somewhat clammy; non-glandular and glandular trichomes uncoloured, sessile glands 4 or 8-celled, orange-red. Roots thickened-tuberos, fleshy-fibrous. Stems square, erect to straggling, fleshy, easily snapped, the lower parts up to 7 mm diameter and noticeably thickened forming weak tubers from which reshooting occurs annually, pink-purple; upper parts with persistent

indumentum, non-glandular trichomes sparse and shaggy, 2-seriate, weakly divaricate (mainly held at 90° to stem), longer trichome series 8–12-celled up to 4 mm long, shorter trichome series 4–6-celled up to 0.4 mm long, glandular trichomes dense, uniseriate, very short (< 0.1 mm long) although occasionally up to 0.7 mm long, sessile glands absent or rarely scattered to dense. Leaves discoloured, petiolate; petioles 8–55 $\times$ 1.5–3 mm, channelled on top, pink-purple, non-glandular trichomes sparse and shaggy, 2-seriate, weakly divaricate (mainly held at 90° to stem), longer trichome series 8–12-celled up to 4 mm long, shorter trichome series 4–6-celled up to < 0.5 mm long, glandular trichomes moderately dense, generally very short (< 0.2 mm long) although up to 0.7 mm long on occasion, sessile glands 8-celled, dense; laminae cordate-ovate, fleshy, keeled, 20–65 $\times$ 15–60 mm, crenate with 10–14 teeth up to 4 mm long on each margin, of similar length along margin, secondary teeth poorly developed; tip acute; base subcordate to truncate; upper surface somewhat glossy olive-green, veins impressed, velutinous, non-glandular trichomes moderately dense, 2-seriate, long trichome series divaricate, 8–10-celled and 1–4 mm long, short trichome series divaricate, 4–6-celled up to 0.8 mm long, glandular trichomes $\pm$ sessile (< 0.1 mm long), sessile glands dense, 8-celled or a mixture of 4 and 8-celled; lower surface paler green to silver-green and with a hoary silver frosting from indumentum, veins strongly raised, non-glandular trichomes dense, 2-seriate, divaricate, long trichome series 8–12-celled and 1.8–3 mm long, short trichome series 4–6-celled and < 0.5 mm long, glandular trichomes scattered, $\pm$ sessile and < 0.1 mm long, sessile glands dense, 4 and 8-celled. Inflorescence up to 120 mm long, usually single or with 1 or 2 side branches, pedunculate for up to 16 mm; axis square in cross-section, pink-purple, strongly channelled, non-glandular trichomes dense, 2-seriate, divaricate, long trichome series 8–14-celled up to 3 mm long, short trichome series 4–6-celled and < 0.5 mm long, glandular trichomes moderately dense, very short (< 0.4 mm long), sessile glands sparse

to moderately dense, 4-celled; bracts broadly orbicular-reniform to orbicular-obovate, $1.8\text{--}2.2 \times 1.8\text{--}3.5$ mm, initially somewhat comose, non-glandular trichomes sparse, 2-seriate, divaricate to somewhat antrorse, long trichome series 8–14-celled up to 2.5 mm long, short trichome series 4–6-celled up to 0.4 mm long, glandular trichomes absent, sessile glands moderately dense, 4 and 8-celled; verticillasters 10–12-flowered, up to 5 mm apart; pedicels $1.8\text{--}2 \times c. 0.2$ mm, non-glandular trichomes occasional to sparse, 2-seriate, divaricate, long trichome series 8–14-celled up to 1 mm long, short trichome series 4–6-celled and < 0.3 mm long, glandular trichomes dense, very short (< 0.1 mm long), sessile glands absent or occasional and 4 or 8-celled. Flower calyces 1.5–1.6 mm long, non-glandular trichomes dense and shaggy, 2-seriate, divaricate to horizontal at 90° to tube, long trichome series 8–14-celled up to 2 mm long, short trichome series 4–6-celled and < 0.5 mm long, glandular trichomes occasional and very short (< 0.1 mm long), sessile glands dense, 4 or 8-celled. Corolla 7.5–10 mm long, lilac-purple; tube 3.6–5 mm long, abruptly curved at $40\text{--}80^\circ$ 1.8–2 mm from the base, slightly inflated upwards, glabrous; upper lobes suborbicular, erect to reflexed, $1.5\text{--}1.8 \times 1.5\text{--}1.8$ mm, non-glandular trichomes sparse, divaricate, 8–14-celled up to 2 mm long, glandular trichomes absent, sessile glands occasional, 4-celled; lateral lobes oblong, $1.2\text{--}1.3 \times 0.7\text{--}0.8$ mm, glabrous, purple and centrally edged with white; lower lobe broadly ovate, $3.5\text{--}5 \times 3.2\text{--}4.5$ mm, non-glandular trichomes sparse, divaricate, 2–4-celled and < 0.3 mm long, glandular trichomes absent, sessile glands scattered, 4 or 8-celled; filaments filiform, $7\text{--}11 \times c. 0.2$ mm, lilac, fused for 3–3.5 mm from the base; anthers $c. 0.4 \times 0.3$ mm; style filiform, $9\text{--}10 \times c. 0.2$ mm, lilac, bifid for $c. 0.4$ mm. Fruit calyces 2.5–2.7 mm long; upper lobe oblong-ovate, $0.8\text{--}0.9 \times 0.8\text{--}0.9$ mm; lateral lobes lanceolate-falcate, $1\text{--}1.2 \times 0.5\text{--}0.6$ mm; lower lobes lanceolate-falcate, $1.5\text{--}1.7 \times 0.5\text{--}0.6$ mm. Nutlets flattened convex, 0.7–0.8 mm long, 0.7–0.8 mm wide, 0.5–0.6 mm thick, glossy brown, weakly verrucose. **Figs. 6–10.**

Additional specimens examined: Queensland. MORETON DISTRICT: Canungra to Mt Tamborine Road, Feb 2014, *Forster PIF40715* & *Leiper* (BRI, MEL); Lamington NP, near Plum Pudding, Feb 2014, *Forster PIF40716* & *Leiper* (BRI, MEL); cult. Beenleigh (ex Numinbah Valley, S of Chesters Road), Feb 2014, *Leiper s.n.* (BRI [AQ837024]); Numinbah Valley, S of Chesters Road, Feb 2014, *Forster PIF40692* & *Leiper* (BRI, K, MEL, NSW); Cainbale cliffs, Lamington NP, S of Canungra, Jan 2000, *Bean 15967A* [& *Leiper*] (BRI); Lamington NP, Pats Bluff, Mar 2014, *Forster PIF40758* & *Leiper* (BRI).

Distribution and habitat: *Plectranthus geminatus* has a relatively small area of occurrence from south of Canungra to the northern parts of the Lamington Plateau (Sarabah Range, western cliffs) in south-east Queensland (**Map 1**). Three populations (*PIF40716*, *PIF40722* and *PIF40758*) have been found on rock outcrops or platforms derived from north-westerly basalt flows (Hobwee basalts of the Lamington Group) from the Tweed or Mt Warning Shield Volcano caldera (Stevens 1970; Willmott 2004) and are generally immediately adjacent to grassy woodland dominated by eucalypts (e.g. *Eucalyptus banksii* Maiden and *E. quadrangulata* H.Deane & Maiden or *E. crebra* F.Muell. and *E. melliodora* A.Cunn. ex Schauer). Two populations (*PIF40692* and *PIF40715*) occur on small rhyolite outcrops (Binna Burra rhyolites) derived from the same volcano (Willmott 2004) with associated grassy woodland dominated by eucalypts (e.g. *Corymbia intermedia* (R.T.Baker) K.D.Hill & L.A.S.Johnson, *Lophostemon confertus* (R.Br.) Peter G.Wilson & J.T.Waterh. or *E. carnea* R.T.Baker and *E. tereticornis* Sm.). These rock outcrops or platforms are often small in individual extent (e.g. populations sampled by *PIF40692*, *PIF40715*, *PIF40716*), though some are much larger (*PIF40722* & *PIF40758*) but tend to be mainly precipitously vertical in their entirety and thus difficult to access. Soils are skeletal to non-existent and the plants grow mainly in humus or leaf litter that has accumulated in crevices or flatter areas. At some localities, populations of *P. graveolens* are close by or occasional plants are intermingled with those of *P. geminatus*.

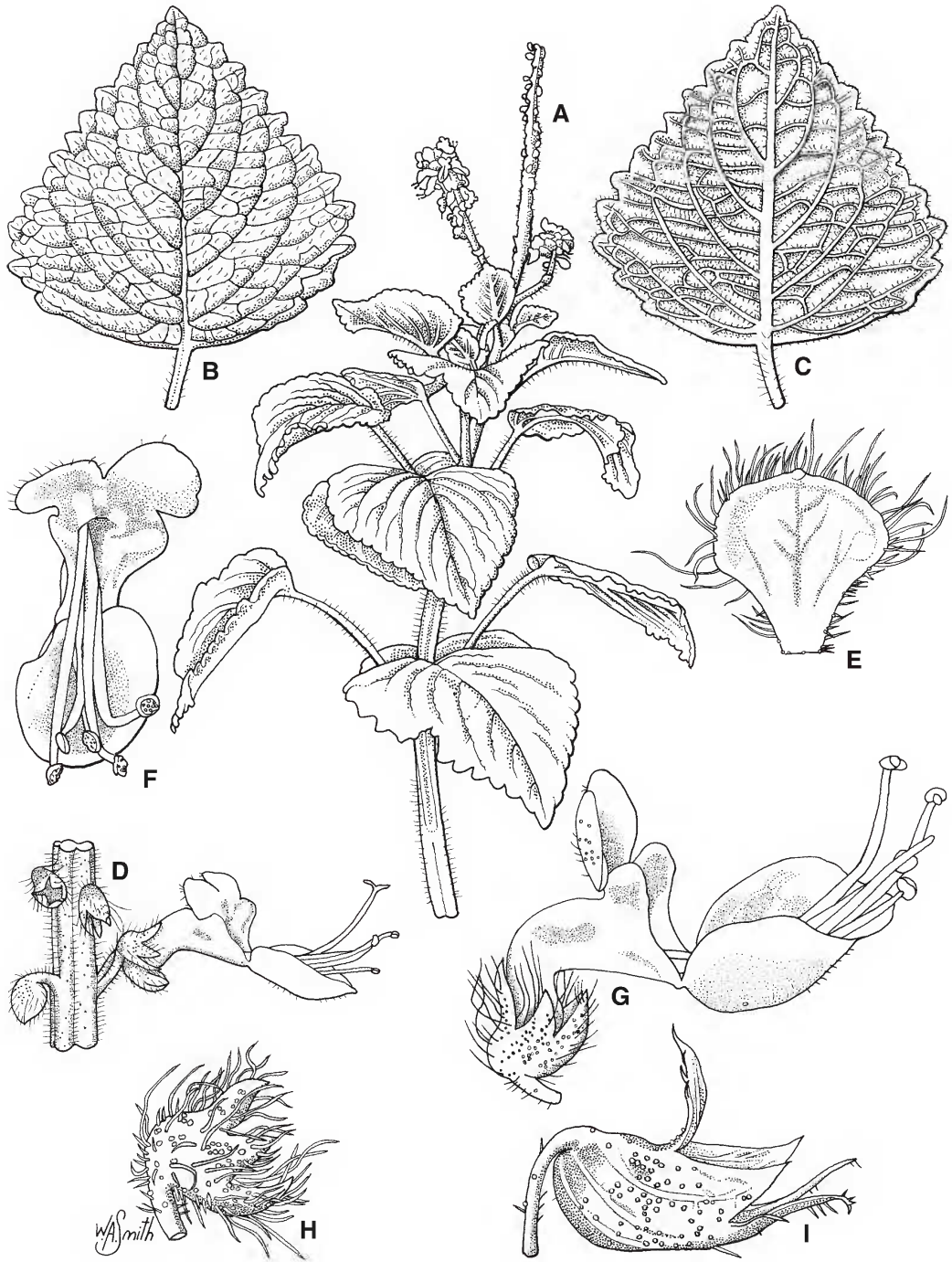


Fig. 6. *Plectranthus geminatus*. A. habit of flowering stem $\times 0.5$. B. adaxial leaf surface $\times 1$. C. abaxial leaf surface $\times 1$. D. part of rachis showing channelling and part verticillasters $\times 4$. E. floral bract $\times 8$. F. front view of flower $\times 8$. G. lateral view of flower $\times 8$. H. lateral view of flower calyx $\times 12$. I. lateral view of fruit calyx $\times 12$. All from *Leiper s.n.* (BRI [AQ837024]). Del. W. Smith.



Fig. 7. *Plectranthus geminatus*. Habit of plants in the Numinbah Valley (Forster PIF40692 & Leiper). Photo: G. Leiper.



Fig. 8. *Plectranthus geminatus*. Thickened tuberous base to stems of plants from Cainbale Falls (Forster PIF40722 & Leiper). Photo: G. Leiper.



Fig. 9. *Plectranthus geminatus*. Foliage demonstrating dense sessile orange-red glands from plants in the Numinbah Valley (Forster PIF40692 & Leiper). Photo: G. Leiper.

Notes: *Plectranthus geminatus* was first collected by Tony Bean and Glenn Leiper at Cainbale cliffs in 2000. The locations of some of the other populations were communicated to Glenn Leiper by Bruce Dalyell and collections made from these in February 2014.

Plectranthus geminatus is unique in a number of character states, notably the dense covering of orange-red sessile glands that impart a reddish look to the foliage, the pronounced biseriate nature of the dense and shaggy non-glandular indumentum on most foliage parts and the broadly orbicular-reniform to orbicular-obovate floral bracts. There are obvious gross morphological affinities between this species and *P. caldericola* P.I.Forst. from adjacent New South Wales, the latter occurs on porphyritic basalts (Forster 2011). That species by comparison is generally more decumbent, lacks the noticeably thickened stem bases, has a faint 'lemony' scent to the crushed foliage, the non-glandular indumentum is not in two

distinct series, the laminae are broadly ovate to almost lobate (versus cordate-ovate) with 7–9 teeth per margin (versus 10–14), the floral bracts are broadly orbicular-reniform to orbicular-obovate (versus broadly-ovate to obovate) and the corolla tube is weakly curved (versus abruptly).

Conservation status: It is likely that continued exploration of suitable habitat for this species in the general area of occurrence will reveal further populations. Some of the known populations (PIF40692 & PIF40715) are in habitats that are greatly disturbed and besieged by alien weeds such as *Bidens pilosa* L., *Ageratum houstonianum* Mill., *Ageratina adenophora* (Spreng.) R.M.King & H.Rob. and *Lantana camara* L. The three populations that are present in Lamington National Park are currently in good condition, though their location makes them somewhat vulnerable to occasional trampling from bush walkers and rock climbers. A suggested conservation coding is **Vulnerable** based on the criterion D2 (IUCN 2001).



Fig. 10. *Plectranthus geminatus*. Inflorescence with flowers from plants at Pat's Bluff (Forster PIF40758 & Leiper). Photo: G. Leiper.

Plectranthus geminatus joins a special group of localized endemics from the northwest part of the Mt Warning caldera (primarily the Lamington Plateau and footslopes in Queensland). Other endemic vascular plant species include *Rhizanthella omissa* D.L.Jones & M.A.Clem. and *Uromyrtus lamingtonensis* N.Snow & Guymer from shrubland on basalt or rhyolite,

Podolepis monticola R.J.Henderson and *Westringia rupicola* S.T.Blake from basalt and rhyolite cliff faces and rock outcrops and *Antrophyum austroqueenslandicum* D.L.Jones from rainforest.

Etymology: The specific epithet is from the Latin word *geminatus* (double) and alludes to the biseriate nature of the non-glandular indumentum on the foliage.

Acknowledgements

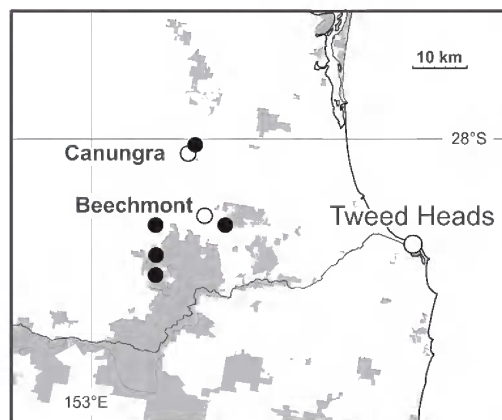
I am very grateful to Glenn Leiper for his assistance with location of populations and photographing of material. Artwork was undertaken by Will Smith.

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Map 1. Distribution of *Plectranthus geminatus* ● in south-east Queensland.